



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,272	02/27/2004	Elaine W. Jin	86387SHS	9378
7590 Pamela R. Crocker Patent Legal Staff Eastman Kodak Company 343 State Street Rochester, NY 14650-2201				
EXAMINER				
LEE, JOHN W				
ART UNIT		PAPER NUMBER		
2624				
MAIL DATE		DELIVERY MODE		
04/15/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/789,272

Applicant(s)

JIN ET AL.

Examiner

JOHN Wahnkyo LEE

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 4, 8, 24-34, 37 and 44-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7, 9-23, 35-36, 38-43 and 53-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The response received on 2 February 2009 has been placed in the file and was considered by the examiner. An action on the merits follows.

Response to Amendment

2. Applicant's arguments filed on 22 January 2009 have been fully considered. The applicant amended claim 3 and cancelled claims 4 and 8. The objection to claim 3 will be withdrawn.

Response to Arguments

3. Applicant's arguments with respect to claims 1-3, 5-7, 9-23, 35-36, 38-43 and 53-57 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-3, 5-7, 9-23, 35-36, 38-43 and 53-57 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no

disclosure of "customization information describing a capability of a user to fuse stereoscopic image" in the original specification.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-3, 5-7, 9-23, 35-36, 38-43 and 53-57 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear the claim limitation, "describing a capability of a user to fuse stereoscopic image" is trying to recite in the claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-6, 9-11, 14, 16-20, 35-41 and 53-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2003/0197779) in view of Dhond et al. ("Stereo Matching in the Presence of Narrow Occluding Objects Using Dynamic Disparity Search"), and further in view of Nefian et al. (US 2003/0113018).

Regarding claim 1, Zhang discloses a method for customizing scene content (Fig. 4; abstract), according to a user or a cluster of users (Fig. 1-A and B, abstract, "conferee"), for a given stereoscopic display (Fig. 12-1242 and 1248), comprising the steps of: a) obtaining customization information describing a capability of a user to fuse

stereoscopic images (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database"). However, Zhang does not disclose rest of the claim limitations of steps b) to d). Instead of Zhang, Nefian discloses obtaining a scene disparity map (Fig. 2-210; paragraph [0022], "creation of a depth disparity map") for at least one of a pair of given stereo images (Fig. 2-200; paragraph [0022], "stereo video") and a three-dimensional (3D) computer graphic model and e) at least one of applying the customized disparity map and rendering conditions for one of rendering and re-rendering the stereo images for subsequent display (Fig. 2-270; paragraph [0024], "... three dimensional extraction"); Dhond discloses c) determining an aim disparity range for the user (chapter IV-A; Fig. 3; page 721, "disparity range [min_disp, max_disp]") and d) at least one of generating a customized disparity map and rendering conditions for a three-dimensional (3D) computer graphic model correlating with the user's fusing capability of the given stereoscopic display (chapter IV-F; Fig. 3; page 721, "composite disparity map").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nefian's invention and Dhond's invention in Zhang's invention to create a dynamic stereoscopic system.

Regarding claim 2, Zhang further discloses wherein the customization information includes at least one of a user profile and/or a rendering intent subject to a predetermined task choice and skill level (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database").

Regarding claim 3, Zhang further comprising a step f) comprising at least one of:
(i) obtaining display attributes prior to determining the aim disparity range for the user
(ii) displaying the stereo images compatible to the user's capacity for fusing stereoscopic imagery, and (iii) determining a viewing distance of the user (paragraph [0025], "capture different views of the conferees").

Regarding claim 5, Nefian further discloses wherein the stereo images or 3D computer graphic model being obtained (Fig. 2-200; paragraph [0022], "stereo video").

Regarding claim 6, Nefian further discloses wherein the scene disparity map being obtained for rendered stereo images (Fig. 2-210; paragraph [0022], "creation of a depth disparity map").

Regarding claim 9, Dhond further discloses wherein the step of generating a customized disparity map further including using the scene disparity map for specific scene content and the aim disparity range according to the user in combination with a predetermined mapping function (chapter IV-F; page 721, " $d_{comp}(i,j)$ ").

Regarding claim 10, Dhond further discloses wherein the predetermined mapping function being dependent on a region of interest (chapter IV-A; page 721, "BG and FG").

Regarding claim 11, Dhond further discloses wherein the region of interest being dynamic (chapters IV-A and B; Fig. 3; page 721, "DDS").

Regarding claim 14, Dhond further discloses wherein the step of generating the customized disparity map including a re-mapping process (chapter IV-F; page 721, " $d_{comp}(i,j)$ ").

Regarding claim 15, Nefian further discloses wherein the step of generating the customized disparity map being accomplished by applying a linear transformation to the scene disparity map (equations (5) and (6); paragraph [0038], "Gaussian

Regarding claim 16, Nefian further discloses wherein the step of generating the customized disparity map being accomplished by applying a non-linear transformation to the scene disparity map (equations (5) and (6); paragraph [0038], "Gaussian probability density function").

Regarding claim 17, Dhond further discloses wherein a plurality of disparities in the scene disparity map being increased after re-mapping the customized disparity map(chapters IV-A and F).

Regarding claim 18, Dhond further discloses wherein a plurality of disparities in the scene disparity map being decreased after re-mapping the customized disparity map(chapters IV-A and F).

Regarding claim 19, Dhond further discloses wherein the region of interest being based upon a measurement of fixation position (Fig. 3; chapter IV-C).

Regarding claim 20, Dhond further discloses wherein the region of interest being based upon a map of probable fixations (Fig. 3; chapter IV-C).

Regarding claim 35, Zhang discloses a stereoscopic display system customized for a user's stereoscopic fusing capability (Fig. 12; paragraphs [0082] and [0083]), comprising: a) an image source (Fig. 1-108; paragraph [0025], "two cameras"); b) a storage device (Fig. 12-1216; paragraph [0088], "hard disk drive") for storing customization information describing a capability of the user to fuse stereoscopic

images (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database"); and c) a stereoscopic display; and d) a processor (Fig. 12-1204; paragraph [0085], "processing unit") for receiving images from the image source (Fig. 1-108; paragraph [0025], "two cameras") and the customization information (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database") from the storage device (Fig. 12-1216; paragraph [0088], "hard disk drive"), processing the images and providing a rendered image to the stereoscopic display (Fig. 12-1242; paragraph [0093], "monitor.. display device"). However, Zhang does not disclose all the claim limitation. Instead of Zhang, Nefian discloses modifying the disparity of one or more pixels in the image (Fig. 2-210; paragraph [0022], "creation of a depth disparity map"); Dhond discloses the capability of the user to fuse stereoscopic images (chapter IV-F; Fig. 3; page 721, "composite disparity map").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nefian's invention and Dhond's invention in Zhang's invention to create a dynamic stereoscopic system.

. Regarding claim 36, Zhang further discloses wherein the customization information including at least one of a capability of the user to converge the user's eyes, a capability of the user to diverge the user's eyes, a user's phoria, a user's capability of accommodation, a user's range of fusion, and a rendering intent of the image (Figs. 2-204 and 3; paragraphs [0032] and [0084], "eye-gaze correction module").

Regarding claim 38, Zhang discloses comprising: e) an input device communicatively linked to the processor for providing input data and/or functions to the processor (Fig. 12-1240; paragraph [0092], "I/O interface").

Regarding claim 39, Zhang discloses comprising: e) a sensor communicatively linked to the processor for providing sensory data and/or functions about the user to the processor (Fig. 1-108; paragraph [0025], "two cameras").

Regarding claim 40, Zhang discloses wherein the sensory data includes head positioning, accommodative of a state of the user's eye and a direction of eye gaze of the user (Figs. 2-204 and 3; paragraphs [0032] and [0084], "eye-gaze correction module").

Regarding claim 41, claim 41 is analogous and corresponds to claim 1. See rejection of claim 1 for further explanation.

Regarding claim 53, Dhond discloses selecting a mode (chapter IV; page 720, "BG and FG disparity pools") of determining an aim disparity range for the user. Rest of the claim limitations are analogous and correspond to claim 1. See rejection of claim 1 for further explanation.

Regarding claim 54, claim 54 is analogous and corresponds to claim 35. See rejection of claim 35 for further explanation,

Regarding claim 55, claim 55 is analogous and corresponds to claim 38. See rejection of claim 38 for further explanation.

Regarding claim 56, claim 56 is analogous and corresponds to claim 39. See rejection of claim 39 for further explanation.

Regarding claim 57, claim 57 is analogous and corresponds to claim 40. See rejection of claim 40 for further explanation.

10. Claims 7, 12-13, 15, 21-23 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2003/0197779) in view of Dhond et al. ("Stereo Matching in the Presence of Narrow Occluding Objects Using Dynamic Disparity Search"), and further in view of Nefian et al. (US 2003/0113018) and further in view of Woods et al. ("Image Distortions in Stereoscopic Video Systems").

Regarding claim 7, Zhang, Nefian and Dhond disclose all the previous claim limitation including depth information being obtained from the 3D computer graphics model (chapter IV-A; Fig. 3; page 721, "disparity range [min_disp, max_disp]"), which is disclosed by Dhond. However, Zhang, Nefian and Dhond do not disclose the convergence point, but Woods does. Woods discloses wherein a scene convergence point (Chapter 1-1.2; page 2, "convergence point").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nefian's invention, Dhond's invention and Woods's invention in Zhang's invention to create a dynamic stereoscopic system.

Regarding claim 12, Woods further discloses wherein that the rendering intent being dependent on skill of the user within a stereoscopic viewing environment (chapter IV-1.2; page 2, "... variables ...").

Regarding claim 13, Woods further discloses wherein the rendering intent correlating to a type of task that the user will perform in a stereoscopic viewing environment (Figs. 2 and 3; chapter IV-1.2; page 2, "... variables ...").

Regarding claim 15, Woods further discloses wherein the steps of generating the customized disparity map being accomplished by applying a linear transformation to the scene disparity map (equation (5) and (6)).

Regarding claim 21, Woods further discloses wherein the step of determining an aim disparity range undergoes a calculation based on parameters selected from the group consisting of a viewing distance for the user and the display attributes (chapter 1-1.2; pages 2 and 3).

Regarding claim 22, Woods further discloses wherein the step of generating rendering conditions for a three-dimensional (3D) computer graphic model including computing a location, an orientation, a focal distance, a magnification and a depth of field correlating to a pair of simulated cameras (Figs. 1-3; equations (1)-(14); chapters 1-1.2 and 1.3; pages 2-5).

Regarding claim 23, Woods further discloses wherein the step of applying the rendering conditions involving modifying one or more of a set of correlating camera measurements that include camera location, orientation, focal distance, magnification and depth of field (Figs. 1-3; equations (1)-(14); chapters 1-1.2 and 1.3; pages 2-5).

Regarding claim 42, Zhang, Dhond, Nefian discloses all the previous claim limitations. Moreover, Zhang discloses that wherein the means for determining an aim disparity range for the user, includes: a) means for obtaining a stereoscopic display user's identifier (paragraph [0040], "conferee's personalized face model is acquired ... " and "markers"); b) means for determining whether the stereoscopic display user has a user profile (paragraph [0040], "conferee's personalized face model is acquired ..."); c)

means for retrieving a found user profile for the stereoscopic display user (paragraph [0040], "conferee's personalized face model is acquired ..."); d) means for creating the user profile where no existing user profile is found (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database"). However, Zhang does not disclose rest of the claim limitations from step e) to h). Instead of Zhang, Wood discloses e) means for obtaining rendering intent correlating to the stereoscopic display user (chapter 1-1.3; equations (1)-(14); pages 3-5); f) means for assigning values for skill level (Cs) of the stereoscopic display user and type of tasks (Ct) that the stereoscopic display user will perform (chapters 1-1.2 and 1.3; equations (1)-(14); pages 2-5, "variables"). Dhond discloses g) means for assigning a value, as an adaptive factor, Ca, for compensating for a dynamic viewing experience (chapter IV-A; page 721, "fg_init" and "bg_init") subject to the stereoscopic display user; and h) means for calculating the aim disparity range subject to above steps (chapter IV-A; Fig. 3; "disparity range [min_disp, max_disp]").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nefian's invention, Dhond's invention and Wood's invention in Zhang's invention to create a dynamic stereoscopic system.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN Wahnkyo LEE whose telephone number is (571)272-9554. The examiner can normally be reached on Monday - Friday (Alt.) 7:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Art Unit: 2624

Customer Service Representative or access to the automated information system, call
800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John Wahnkyo Lee/
Examiner, Art Unit 2624

/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624